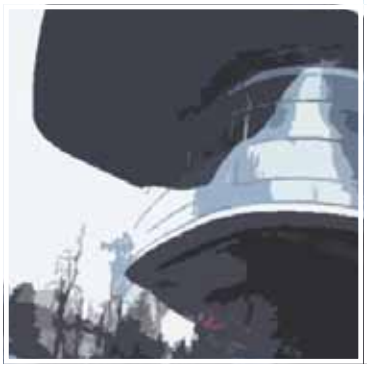
MAÎTRISE DES
RISQUES ET SÛRETÉ
DE FONCTIONNEMENT

TOURS
16-18 OCTOBER 2012



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Risk management for complex systems

IMdR
Institut pour la Maîtrise des Risques
Sûreté de Fonctionnement - Management - Cindyniques

Call for papers

Risk management for complex systems

During the second half of last century, the technological evolution, from simple to more sophisticated systems has pointed out the prime importance of a systemic approach including interface management as well as human and organizational factors. Such approaches are needed to be able to manage system development from design phase up to manufacturing, operation or maintenance phases.

The end of last century has been characterized by an evolution towards increasing complexity and systems have turned up from pure technological devices towards hybrid socio-technical systems.

When a system can be defined as a whole set of dynamically interactive items organized together with the end purpose to reach a goal, its complexity depending on the number of interactions involved, is hardly relevant to modelling, and hence hardly predictable regarding its evolution. System complexity can be defined through the number of interactions between entities, or more simply through the impossibility to get both a global vision and a precise vision from a single person.

Thus since the beginning of the 21st century we face an increasing complexity of technologies and methods used to implement the design , manufacturing, operation, maintenance and even dismantling processes. Increasing complexity on the technical field appears jointly with complexities on new fields such as organizational or legal ones.

One only needs to draw up the list of entities involved in design, production or maintenance of a plane or even in the “simpler” system of a modern car.

To face this increasing complexity, risk management should evolve in its practices and approaches of design and validation of the decisions to be taken all along the various phases of a system life cycle.

Dependability approaches have been initially focused on the technical object and deliverables of a project from an intrinsic safety point of view; they had to enlarge their view to a broader scope far beyond the environment around the technical object. Risk management then has to include human, organizational, economic, industrial, logistic, environmental and cultural components.

The good old and traditional dependability approaches are no longer sufficient to be used alone, even when upgraded, they proved to be complementary of “classical” design and decision processes. A new step is now to be taken for a safe, resilient and sustainable design, whatever the nature of the system, whatever its type of activity.

Safe design can be applied not only to a component, a piece of equipment, a system, but to a production, operation and maintenance process as well. Consequently, safe design is always the purpose, but as applied to other types of entities which the usual dependability approach was not necessarily used for.

There has already been a shift in electric and electronic system design; we ought to work in the same direction for other systems.

This change of paradigm (safe design, safe operation, safe maintenance, etc.) is a new stake for complexity through integration of risk management dimension not only in safety, but also for environment, economic and social challenges.

Dependability approaches and methods have regularly broadened their application field; they can still go further in areas such as management of therapeutic protocols, organization evolution or financial system steadyness,…

Additionally, new domains and new methods which could be possibly transposed from other disciplines such as neurology, genetics, various areas of physics are to be explored and developed …

Should we and are we able to set up rules of complexity management by observing systems from different points of view?

Here is our new challenge: to manage complexity in order to use all its advantages while controlling the whole scope of risks. This implies to:

- Change or modify our approaches: getting feedback from lessons learnet about new approaches when efficient, but also when less efficient.
- Make these new approaches overtake the restrictive circle of specialists in order to produce basic tools for design teams.
- Help to face hazards and new challenges while efficiently controlling their risks, thus contributing to innovation development.
- Generalize and homogenize knowledge between industries taking into account specific stakes but keeping in mind consistency and shared comprehension.

We have been prepared for this challenge with the late Lambda Mu’s dealing with topics such as “Innovation and risk management” or “The new challenges of risk management”.

The expected papers shall reflect works and thoughts of participants to improve systems safety. They shall deal with technical and organizational dimensions, including their interaction; they shall not forget interactions with human or financial aspects. Companies, investors, engineers, consultants, specialists in dependability, risk and crisis management, authorities, researchers and students are invited to report about their works in progress and give presentations without any hangs up about the new approaches of risk management. They can find here after the various sets of themes and technical areas within which they can apply.

Obviously the conference will give place to every activity and area dealing with and innovating in risk management: aerospace, insurance, food industry, biotechnology, chemistry, energy (oil, gas, nuclear, renewable), environment, civil works, computers, mechanics, military, offshore and onshore exploitation, pharmacy, health, telecoms, transportation (air, space, road, railways, maritime).

Jean-François BARBET
Programme Committee Chairman

Symposium Hot Points

- Tutorials to enhance knowledge transfer (Monday, October 15th)
- Industrial Exhibition to permit communication on products and works
- “Research and Industry Sessions” to present works performed jointly between industry and University thesis framework
- Opening and Closing plenary sessions
- The traditional friendly evening
- Two “IMdR” awards to reward the best thesis works
- Golden λμ awards to reward the best industrial communications in “conference” and “interactive” sessions
- Industrial visits, at the end of symposium, to give access to local companies

Informations

Secretarial of the committee: lm18@imdr.eu

Thematic and technical areas

Characterization of complex systems
- Research in progress
- Concepts of emergence
- Communication Networks
- Information flow networks (IT)
- Systemic approach
- Current tools and methods

Maintenance
- Life Cycle, ageing and sustainability
- Management of industrial assets
- Maintenance : activities, organization
- Maintenance : Diagnosis and et prognosis
- Maintenance : optimization
- Obsolescence management
- Integrated logistic support

Field Analysis
- Field Data Collection
- Expert appraisal
- Knowledge Capitalization
- Data Analysis
- Low signals

Risk, cost and uncertainty management
- Project Risks
- Entrepreneurial risks
- Optimization of performances
- Cost reduction
- Risk management cost
- Evaluation opportunities and risks
- Uncertainty Management
- Economic Intelligence

Design - Innovation
- Risk analysis and decision support
- Safe design
- “risk based” Methods
- Innovation technologies and risk management
- Robustness and resilience

Safety and security
- Structure security and safety
- Industrial Security
- Networks and computer systems
- Malevolence
- Accidentology

Contribution of human and social sciences to risk management
- Approaches linked to human factors
- Ergonomics
- Occupational safety
- Accidentology - phenomenology
- Culture de sécurité – sûreté
- Risk Perception and communication

Organization and Risk management
- Approaches related with organizational factors
- Risk factors related with interactions between actors
- Safety_security Culture
- Culture clash
- Generation clash
- Knowledge and education management
- Organization splitting and outsourcing

Law /Standards
- Standards
- Impacts of law constraints
- Legal liabilities
- Law applied to spatial operations

Dependability methods
- Previsional components reliability
- Previsional system reliability
- Dependability modelling
- Probabilistic safety and security studies
- Risk based methods
- Dynamic reliability
- Simulation

Health and environment risk
- Risk related with health care institutions (hospital, laboratory, etc.)
- Environmental Risk
- Sustainable Development

Procedure for submitals

Papers are to be presented at **the latest on December,19th 2011** under summary form (word or pdf format).

All information related to Lambda Mu 18 symposium can be read on http://www.imdr.eu web site, namely the structure to conform with for a paper to be submitted. A heading “guidance to authors” can also be read. Authors are due to pay their fee to be registered at the symposium.

Deadlines

December 19th, 2011:	Reception of summaries	May, 31st, 2012:	Reviewers comments
March 15th, 2012:	Notification to authors	June, 30th, 2012:	Reception of final texts
April, 30th, 2012:	Reception of full texts	October, 16-18th, 2012:	The symposium

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